

In the Drawings:

Applicant has amended the drawings as requested by the Examiner. Applicant has included a copy of the drawings with changes indicated in red, as well as corrected Formal Drawings.

REMARKS

This amendment is in response to the Examiner's Office Action dated 6/21/2004. This amendment should obviate outstanding issues and make the pending claims allowable. Reconsideration of this application is respectfully requested in view of the foregoing amendment and the remarks that follow.

STATUS OF CLAIMS

Claims 1-13 are pending.

Claims 2-5, 8-10, 12 and 13 are cancelled in response to the restriction requirement.

Claims 6 and 11 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 1 and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by the Patent Abstract of Japan (10-224269).

OVERVIEW OF CLAIMED INVENTION

The presently claimed invention provides for a superconducting filter apparatus according to the present invention comprises a superconducting filter that exhibits a prescribed pass-band characteristic when cooled to cryogenic temperatures; a refrigerator for cooling the superconducting filter to cryogenic temperatures; a pilot signal generator for generating a pilot signal that is outside the pass band and inputting the pilot signal to the superconducting filter together with an antenna receive signal; and a discriminating unit for discriminating abnormality in the refrigerator based upon the level of a pilot signal contained in a signal that is output from the superconducting filter.

If the refrigerator develops a malfunction and temperature rises, the pass band of the superconducting filter shifts to the low-frequency side, the frequency of the pilot signal falls within the pass band of the superconducting filter and the pilot signal passes through the superconducting filter. Accordingly, refrigerator abnormality can be detected by monitoring whether the pilot signal is contained in the signal that is output from the superconducting filter.

The present invention provides for many advantageous, some of which are listed below:

- refrigerator malfunction can be detected rapidly and the superconducting filter apparatus can be reduced in size and weight;
- by providing the pilot signal generator in the vicinity of the receive antenna (e.g., by providing a pilot-signal radiating antenna in the vicinity of the receive antenna), the pilot signal can be inserted into the receive signal and input to the superconducting filter without loss;
- by inserting an isolator into an antenna feeder line, it can be so arranged that the pilot signal will not be radiated into space from the antenna even if it is reflected by the superconducting filter and it can be arranged such that the pilot signal will not interfere with other communication channels;
- the level of the pilot signal contained in the signal that is output from the superconducting filter can be detected and the extent of a malfunction can be determined based upon the waveform of the detected level, e.g., the rate of change in the level;
- pilot signals of two waves having different frequencies are generated and input to the superconducting filter, the discriminating unit detects the level of each pilot signal

and the extent of a malfunction can be determined based upon the waveforms of the detected levels; and

- it is possible to construct a wireless receiving amplifier by connecting a low-noise amplifier to the superconducting filter and cooling both the superconducting filter and low-noise amplifier to cryogenic temperatures, thereby amplifying and outputting the signal, which passes through the superconducting filter, by the low-noise amplifier.

In the Claims

REJECTIONS UNDER 35 U.S.C. § 112

The examiner has rejected claims 6 and 11 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicants regard as the invention. Rejections with respect to claims 6 and 11 are considered moot in view of their cancellation via the current amendment.

REJECTIONS UNDER 35 U.S.C. § 102(b)

The examiner has rejected claims 1 and 7 under U.S.C. §102(b) as being anticipated by the patent abstract of Japan (10-224269 patent publication to Shoichi et al.), hereinafter Shoichi. To be properly rejected under 102(b), each and every element of the claims must be disclosed in a single cited reference. The applicant, however, contends that the presently claimed invention cannot be anticipated in view of the Shoichi reference. Applicants wish to note that in the office action of 06/21/04, dependent claims 6 and 11 were only rejected under 35 U.S.C. §112 with respect to minor inconsistencies. Applicants have amended independent claims 1 and 7 to incorporate limitations of claims 6 and 11 respectively (applicants have also addressed minor

inconsistencies pointed out by the examiner). Hence, applicants believe that amended claims 1 and 7 are in condition for allowance.

With respect to independent claims 1 and 7, it should be noted that no new matter has been added as claims 1 and 7 have been amended to include the limitations of dependent claims 6 and 11 respectively.

Shoichi teaches a radio receiver that utilizes a pilot signal having a frequency within an attenuation band of a first and second filter (4 and 14).

Claims 1 of the present invention provide for a superconducting filter that exhibits a prescribed pass-band characteristic when cooled to cryogenic temperatures; a refrigerator to cool the filter to cryogenic temperatures, a pilot signal generator to generate a pilot signal that is outside said pass band and inputting said pilot signal to the superconducting filter together with an antenna receive signal; and a discriminating unit to discriminate abnormality in the refrigerator based upon the level of the pilot signal contained in a signal that is output from the superconducting filter.

The pilot signal generator generates two pilot signals having different frequencies and inputs the pilot signals to the superconducting filter, and the discriminating unit detects the level of each pilot signal contained in the signal that is output from the low-noise amplifier and judges extent of the abnormality based upon the waveforms of each of the detected levels.

In addition to the above-mentioned limitations, claim 7 also teaches a low-noise amplifier to amplify the signal output from the filter.

Applicants contend that the Shoichi reference fails to disclose a pilot signal generator that generates a pilot signal that is outside the pass band of the superconducting filter, wherein the pilot signal is input to the filter along with an antenna receive signal. Applicants also contend that the Shoichi reference also fails to disclose a discriminating unit to discriminate abnormality in a refrigerator based on the level of the pilot signal contained in the signal that is output from the superconducting filter. Furthermore, the Shoichi reference also fails to explicitly or implicitly teach the generation of two pilot signals having different frequencies, wherein the two pilot signals are input to the superconducting filter, with the discriminating unit detecting the level of each pilot signal contained in the signal that is output from the low-noise amplifier and judging the extent of the abnormality based upon the waveforms of each of the detected levels.

Hence, applicants believe that claims 1 and 7 are neither anticipated nor rendered obvious by the Shoichi reference and are in condition for allowance via the current amendment.

SUMMARY

As has been detailed above, none of the references, cited or applied, provide for the specific claimed details of applicant's presently claimed invention, nor renders them obvious. It is believed that this case is in condition for allowance and reconsideration thereof and early issuance is respectfully requested.

A Petition for extension of time is attached. The Commissioner is hereby authorized to charge the extension fee, as well as any deficiencies in the fees provided to Deposit Account No. 50-1290.

If it is felt that an interview would expedite prosecution of this application, please do not hesitate to contact applicant's representative at the below number.

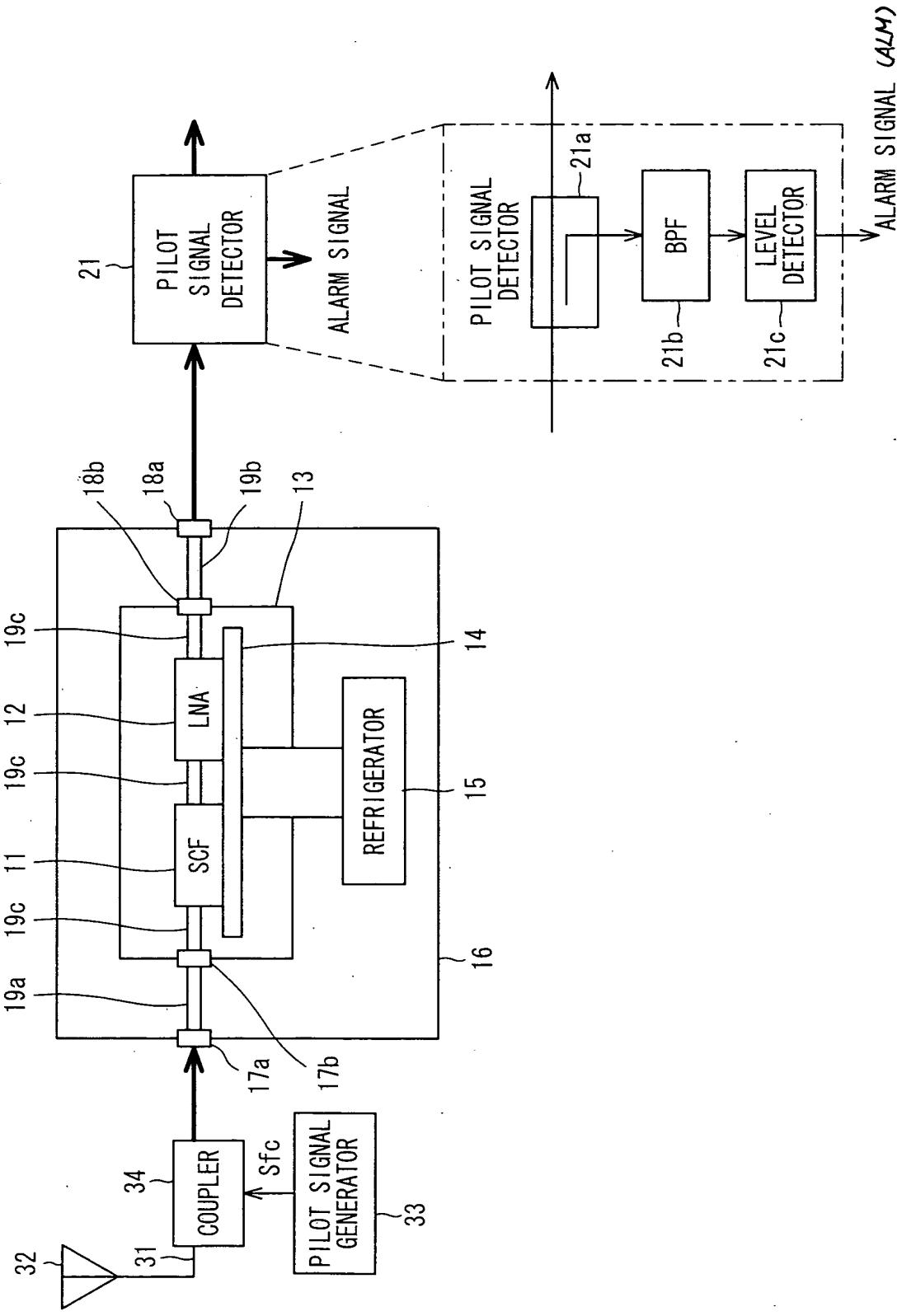
Respectfully submitted,



Brian S. Myers
Registration No. 46,947

575 Madison Ave
New York, NY 10022
(212) 940-8703
December 21, 2004

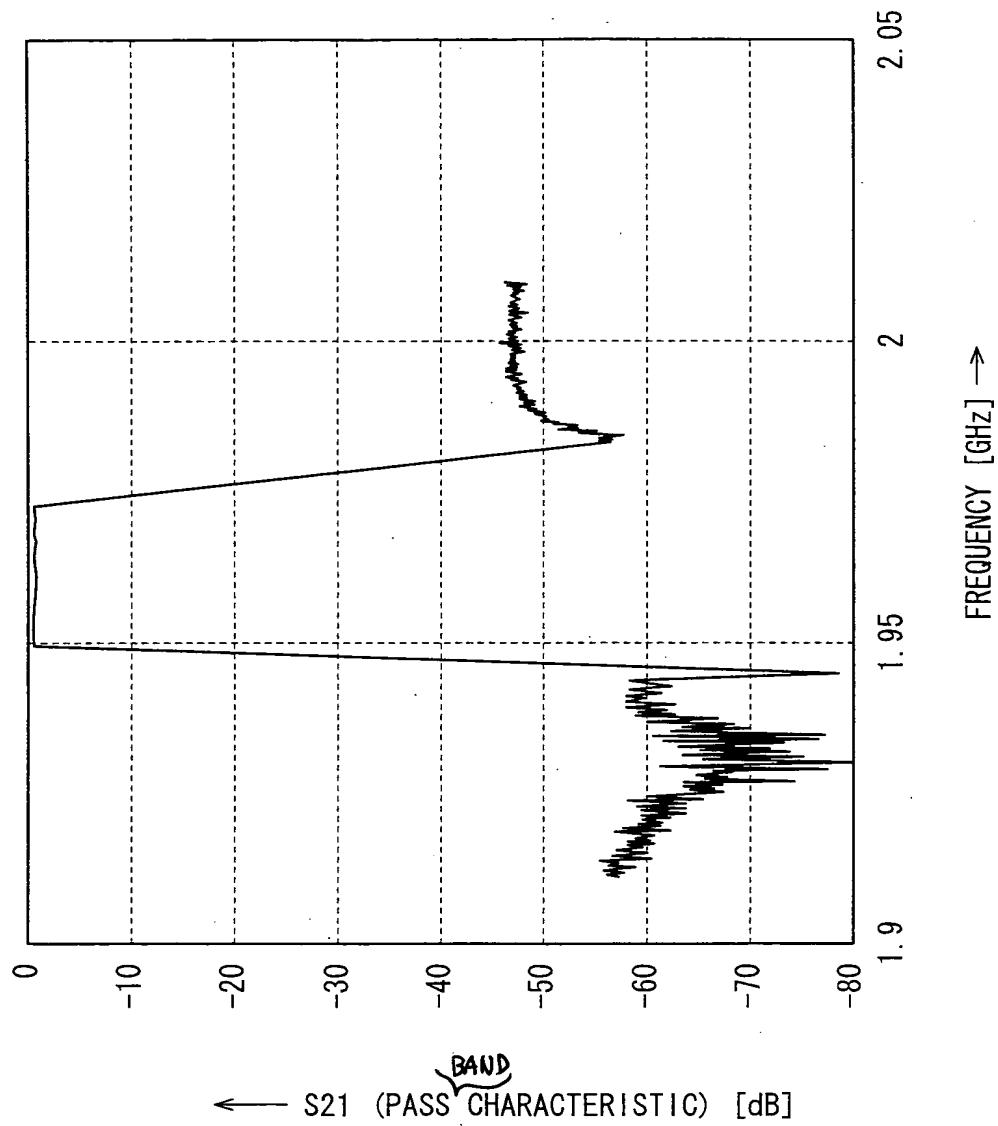
FIG. 1



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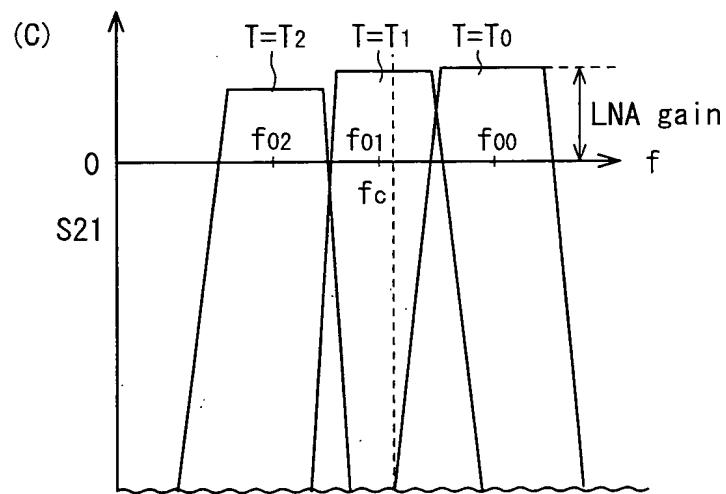
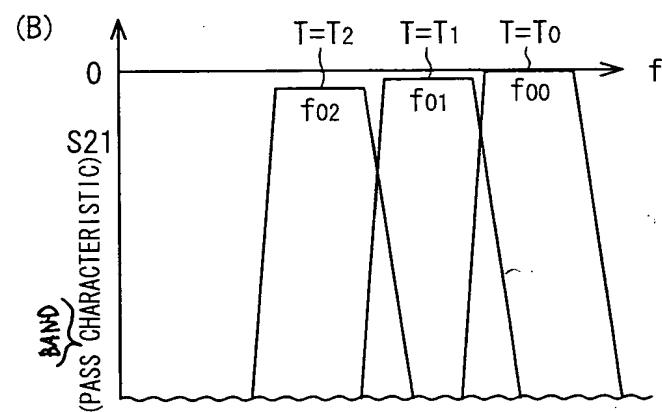
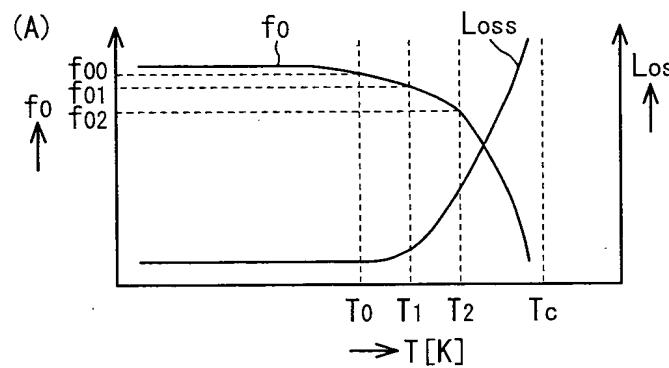
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FIG. 2



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FIG. 3



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FIG. 11

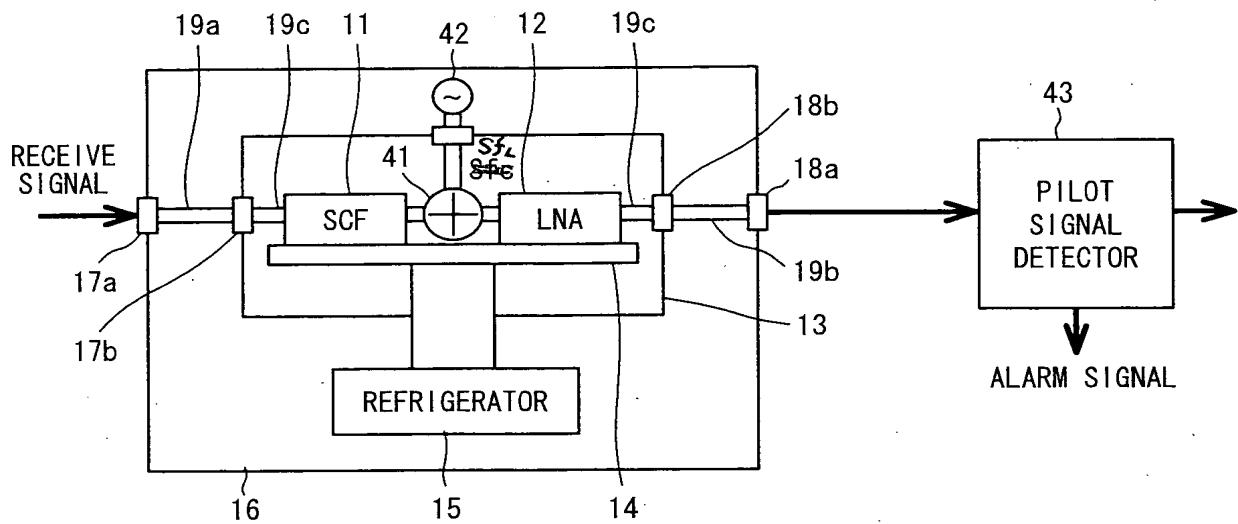
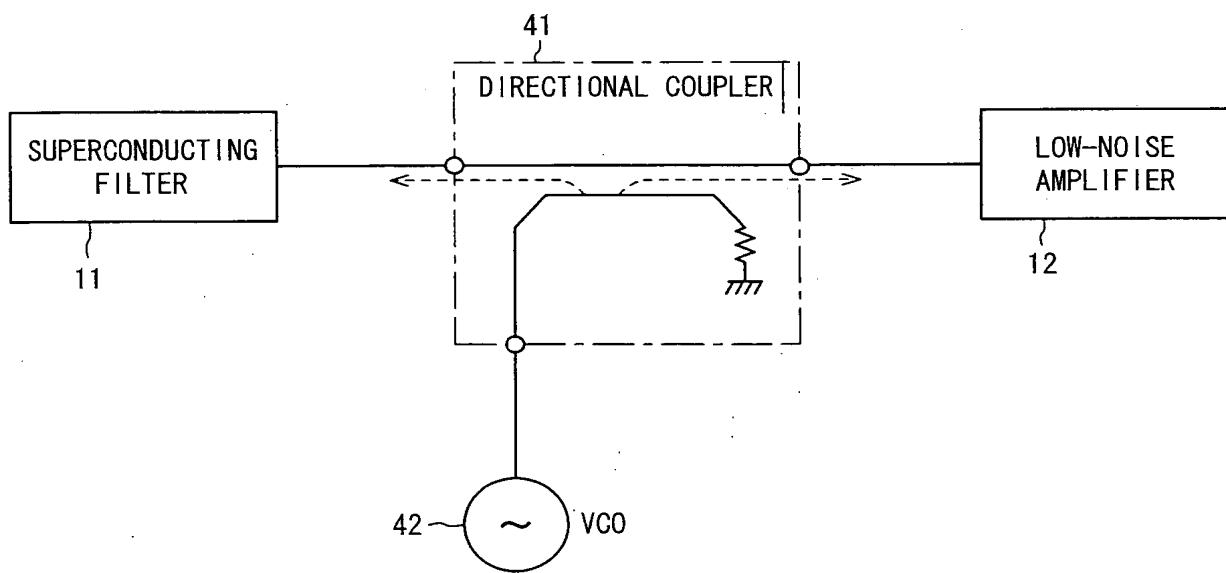


FIG. 12



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FIG. 15

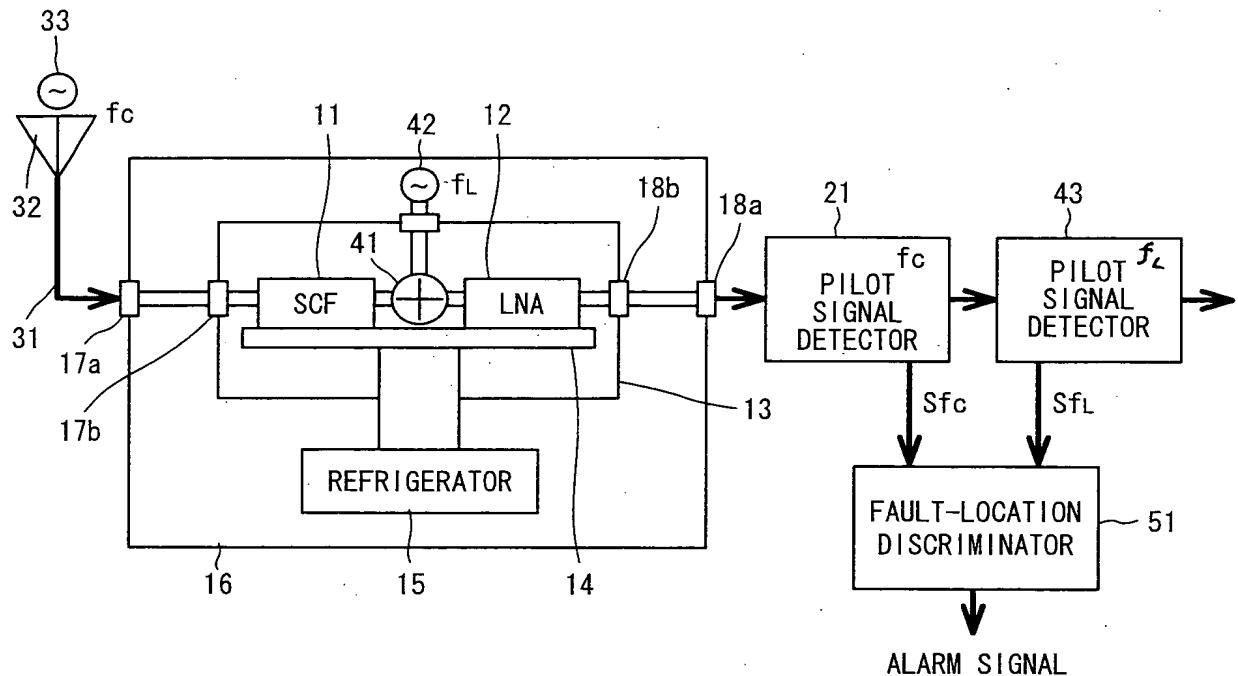


FIG. 16

Case	1	2	3	4	5
S_{fc}	NOT DETECTED	NOT DETECTED	NOT DETECTED	DETECTED	DETECTED
S_{f_L}	NO CHANGE IN LEVEL	DECLINES BY L_d (dB)	DECLINES BY ANY LEVEL	DECLINES BY L_d (dB)	DECLINES BY MORE THAN L_d (dB)
REFRIGERATOR	NORMAL	NORMAL	NORMAL	ABNORMAL	ABNORMAL
LOW-NOISE AMPLIFIER	NORMAL	ABNORMAL	ABNORMAL	NORMAL	ABNORMAL

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FIG. 18 PRIOR ART

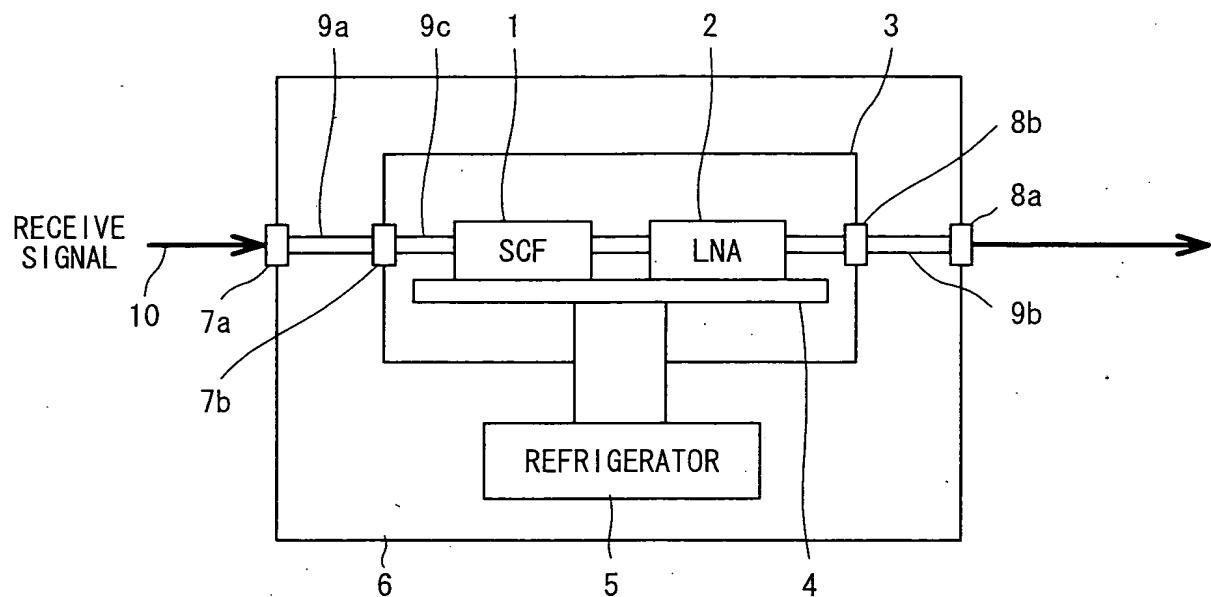
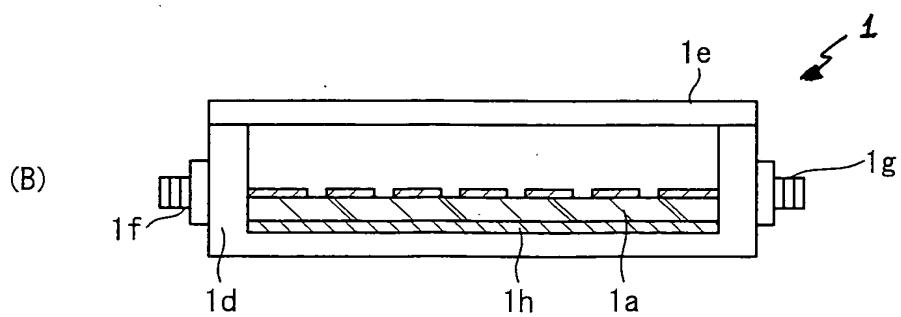
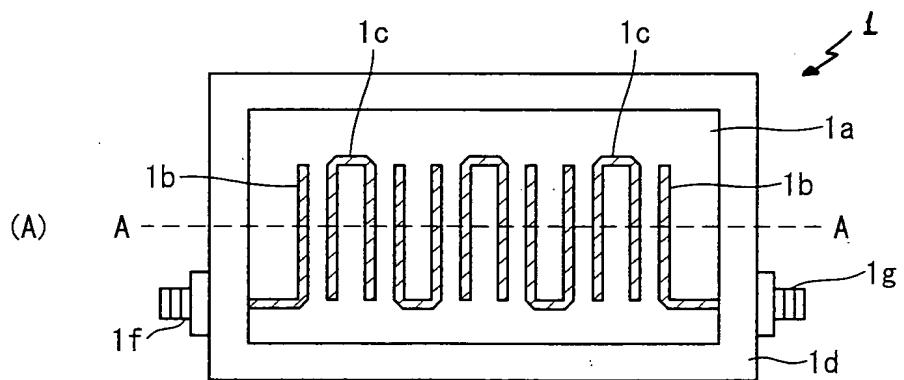


FIG. 19 PRIOR ART



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FIG. 20 PRIOR ART

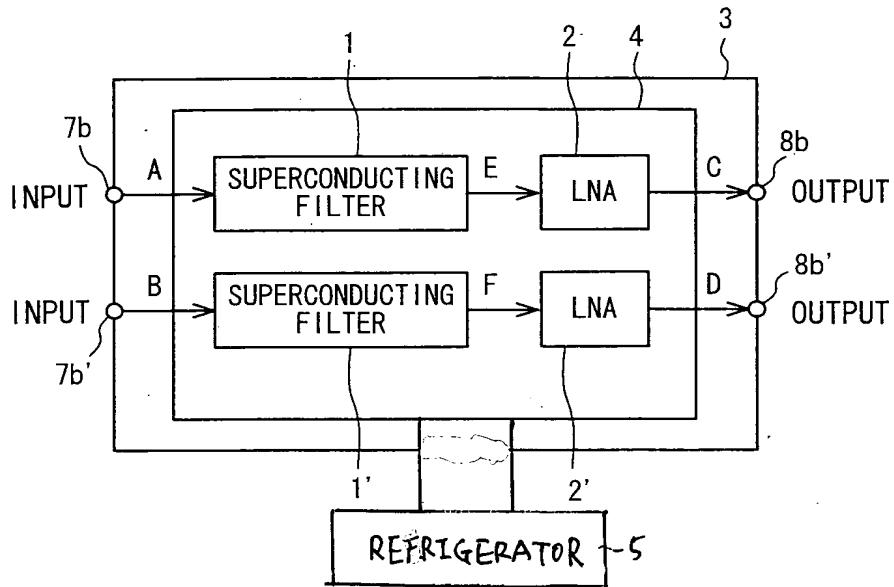


FIG. 21 PRIOR ART

